

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A device for controlling a characteristic of an image .
signal superimposed on a specimen image, comprising:
 - a main optical system configured to refract light emitted from a specimen into a main beam path **of a microscope**;
 - a superimposition apparatus in a fixed relationship to the main optical system, configured to generate the image signal;
 - a superimposing reflector configured to reflect the image signal generated by the superimposition apparatus into the main beam path and to superimpose the image signal onto the specimen image;
 - an image measurement unit in a fixed relationship to the main optical system, configured to measure **at least one of** a brightness, **contrast and color** of the specimen image; **and**
 - a computing unit adapted for at least one of global, zone-by-zone and pixel-by-pixel analysis of at least one of specimen brightness and color; and**
 - ~~a controller configured to adjust brightness of a plurality of regions of the image signal generated by the superimposition apparatus in response to measurements by the image measurement unit of the brightness of corresponding regions of the specimen image, wherein the controller decreases the brightness of the plurality of regions when the brightness of the corresponding regions is measured to be dull~~
 - a controller in communication with the image measurement unit, wherein the controller is adapted to control at least one of the brightness and color of image signals generated by the superimposition apparatus, wherein the control is carried out on at least one of a zone-by-zone and a pixel-by-pixel basis.**

2. (Canceled)

3. (Previously Presented) The device as in claim 1, wherein the image measurement unit is configured to measure a spatial brightness distribution of the specimen image.

4. (Cancelled)

5. (Currently Amended) The device as in claim ~~[[4]]~~ 1, wherein the image measurement unit is configured to measure a spatial color or contrast distribution of the specimen image.

6. (Original) The device as in claim 1, wherein the superimposition apparatus is one of a display and monitor.

7. (Previously Presented) The device as in claim 1, wherein the image measurement unit is configured to measure the brightness of the specimen image by directly measuring light emitted from the specimen and not refracted by the main optical system.

8. (Previously Presented) The device as in claim 1, wherein the image measurement unit is configured to measure the brightness of the specimen image by measuring light emitted from the specimen and refracted by the main optical system into the main beam path.

9. (Original) The device as in claim 8, further comprising a beam splitter configured to reflect a portion of the specimen image from the main beam path to the image measurement unit.

10. (Canceled)

11. (Previously Presented) The device as in claim 33, wherein the image measurement unit is configured to measure brightness of individual regions of the specimen image.

12. (Original) The device as in claim 11, wherein the individual regions are individual pixels.

13. (Previously Presented) The device as in claim 11, wherein the image measurement unit is configured to measure brightness of those individual regions that are in a viewer's line of sight.

14. (Canceled)

15. (Previously Presented) The device as in claim 33, wherein the controller is configured to adjust brightness of individual regions of the image signal generated by the superimposition apparatus in response to the measurement by the image measurement unit.

16. (Original) The device as in claim 15, wherein the individual regions are individual pixels.

17. (Previously Presented) The device as in claim 16, wherein the controller is configured to adjust brightness of individual pixels of the image signal generated by the superimposition apparatus in response to measurements by the image measurement unit of the brightness of the corresponding pixels of the specimen image.

18. (Previously Presented) The device as in claim 15, wherein the controller is configured to adjust brightness of individual regions of the image signal generated by the superimposition apparatus in response to measurements by the image measurement unit of the brightness of the corresponding regions of the specimen image.

19. (Previously Presented) The device as in claim 1, further comprising a manual input unit for providing a manual input signal from a viewer to the controller, wherein the controller is configured to adjust the brightness of the image signal generated by the

superimposition apparatus in response to the manual input signal and the measurement by the image measurement unit.

20. (Original) The device as in claim 19, wherein the manual input unit is operable remotely from the device.

21. (Currently Amended) The device as in claim 1, wherein the image measurement ~~device~~unit is one of a video camera and a CCD.

22. (Currently Amended) A method for controlling a brightness of an image signal superimposed on a specimen image, comprising:

providing a specimen;

producing a specimen image in a microscope for viewing by a viewer;

measuring brightness of the specimen image with an image measurement unit;

analyzing, in at least one of a global, zone-by-zone and pixel-by-pixel manner, the specimen brightness;

generating, with a controller, a control signal based at least in part on the brightness of the specimen image, wherein the control signal is based on at least one of a zone-by-zone and a pixel-by-pixel analysis, and wherein the controller is in communication with the image measurement unit;

producing an image signal having a plurality of regions of brightness that are controlled by the control signal ~~such that the brightness of the plurality of regions is decreased when the brightness of corresponding regions of the specimen image is measured to be dull;~~ and

superimposing the image signal on the specimen image for viewing by the viewer.

23. (Previously Presented) The method as in claim 22, further comprising measuring one of color and contrast of the specimen image and producing an image signal having one of color and contrast that is controlled by the control signal.

24. (Previously Presented) The method as in claim 22, wherein measuring a brightness of the specimen image comprises reflecting a portion of the specimen image via a beam splitter toward an image measurement unit.

25. (Currently Amended) The method as in claim 34, wherein producing an image ~~signal~~ comprises producing an image ~~signal~~ having individual regions, wherein brightness of the individual regions are separately controlled by the control signal.

26. (Original) The method as in claim 25, wherein the individual regions are individual pixels.

27. (Cancelled)

28. (Cancelled)

29. (Canceled)

30. (Currently Amended) The device as in claim ~~[[27]]~~ 33, wherein the image measurement unit is further configured to measure one selected from the group of color and contrast and the superimposition apparatus is further configured to adjust the selected one of color and contrast.

31. (Currently Amended) The device as in claim ~~[[35]]~~ 33, wherein brightness of individual regions of the image ~~signal~~ generated by the superimposition apparatus are individually adjusted in response to measurements by the image measurement unit of brightness of corresponding regions of the specimen image.

32. (Currently Amended) The device as in claim 31, wherein the individual regions of the image ~~signal~~ and the corresponding regions of the specimen image are pixels.

33. (Currently Amended) A device for controlling a characteristic of an image **signal** superimposed on a specimen image, comprising:

a main optical system configured to refract light emitted from a specimen into a main beam path;

a superimposition apparatus in a relationship to the main optical system, configured to generate the image **signal**, wherein the generated image is an image including features not present in the specimen;

a superimposing reflector configured to reflect the image **signal** generated by the superimposition apparatus into the main beam path and to superimpose the image **signal** onto the specimen image;

an image measurement unit in a relationship to the main optical system, configured to measure a brightness of the specimen image; and

a controller configured to adjust brightnesses of a plurality of regions of the image **signal** generated by the superimposition apparatus in response to measurements by the image measurement unit of brightnesses of corresponding regions of the specimen image, ~~so as to maintain substantially constant ratios of each of the brightnesses of the plurality of regions of the image signal to each of the brightnesses of the corresponding regions of the specimen image.~~

34. (Currently Amended) A method for controlling a brightness of an image **signal** superimposed on a specimen image, comprising:

providing a specimen;

producing a specimen image for viewing by a viewer;

measuring a brightness of the specimen image;

generating a control signal based at least in part on the brightness of the specimen image;

producing an image **signal** having a plurality of regions, wherein a brightnesses of the plurality of regions are controlled by the control signal; and

superimposing the image **signal** on the specimen image for viewing by the viewer, wherein the produced image is an image including features not present in the specimen,

~~wherein the control signal is generated so as to maintain substantially constant ratios of each of the brightnesses of the plurality of regions of the image signal to each of the brightnesses of corresponding regions of the specimen image.~~

35. (Cancelled)

36. (Previously Presented) The device as in claim 1, wherein said controller is configured to automatically adjust the brightness of the image signal.

37. (Currently Amended) The ~~device~~ method as in claim 22, comprising automatically producing the image signal having a brightness that is controlled by the control signal.

38. (Previously Presented) The device as in claim 1, further comprising a microscope comprising said main optical system.

39. (Previously Presented) The device as in claim 33, further comprising a microscope comprising said main optical system.

40. (Cancelled)

41. (Cancelled)

42. (Previously Presented) The method as in claim 22, wherein the brightness of the plurality of regions is increased when the brightness of the corresponding regions is measured to be bright.

43. (Currently Amended) The device as in claim 17, wherein the controller is configured to decrease the brightness of individual pixels of the image ~~signal~~ generated by the superimposition apparatus in response to measurements by the image measurement unit of the brightness of the corresponding pixels of the specimen image ~~to be being~~ dull.

44. (Currently Amended) The device as in claim 43, wherein the controller is configured to increase the brightness of individual pixels of the image ~~signal~~ generated by the superimposition apparatus in response to measurements by the image measurement unit of the brightness of the corresponding pixels of the specimen image ~~to be~~ being bright.

45. (Currently Amended) The device as in claim 33, wherein the controller is configured to adjust brightness of substantially all individual pixels of the image ~~signal~~ generated by the superimposition apparatus in response to measurements by the image measurement unit of the brightness of the corresponding pixels of the specimen image such that the ratio of the adjusted brightness of substantially all individual pixels to the measured brightness of the corresponding pixels are substantially all the same.

46. (New) A device for controlling a characteristic of an image superimposed on a specimen image, comprising:

a main optical system configured to refract light emitted from a specimen into a main beam path;

a superimposition apparatus in a fixed relationship to the main optical system, configured to generate the image;

a superimposing reflector configured to reflect the image generated by the superimposition apparatus into the main beam path and to superimpose the image onto the specimen image;

an image measurement unit in a fixed relationship to the main optical system, configured to measure a brightness of the specimen image; and

a controller configured to adjust brightness of a plurality of regions of the image generated by the superimposition apparatus in response to measurements by the image measurement unit of the brightness of corresponding regions of the specimen image, and wherein the controller does not output the superimposed image.

47. (New) A device for controlling a characteristic of an image superimposed on a specimen image, comprising:

a main optical system configured to refract light emitted from a specimen into a main beam path;

a superimposition apparatus in a fixed relationship to the main optical system, configured to generate the image;

a superimposing reflector configured to reflect the image generated by the superimposition apparatus into the main beam path and to superimpose the image onto the specimen image;

an image measurement unit in a fixed relationship to the main optical system, configured to measure a brightness of the specimen image and output a measurement signal indicative of the brightness of the specimen image; and

a controller configured to adjust brightness of a plurality of regions of the image generated by the superimposition apparatus by outputting a control signal to the superimposition apparatus in response to measurements by the image measurement unit of the brightness of corresponding regions of the specimen image,

wherein the measurement signal outputted by the image measurement unit does not include an image of the specimen or an image of a portion of the specimen, and wherein the control signal outputted by the controller does not include an image of the specimen or an image of a portion of the specimen.

48. (New) The device as in claim 46, wherein the controller decreases the brightness of the plurality of regions when the brightness of the corresponding regions is measured to be dull.

49. (New) The device as in claim 47, wherein the controller decreases the brightness of the plurality of regions when the brightness of the corresponding regions is measured to be dull.

50. (New) The device as in claim 33, wherein the controller decreases the brightness of the plurality of regions when the brightness of the corresponding regions is measured to be dull.

51. (New) The method as in claim 34, further comprising decreasing the brightness of the plurality of regions when the brightness of the corresponding regions is measured to be dull.

52. (New) The method as in claim 22, wherein the controller decreases the brightness of the plurality of regions when the brightness of the corresponding regions is measured to be dull.

53. (New) The device as in claim 33, wherein the controller is configured to adjust brightnesses of a plurality of regions of the image generated by the superimposition apparatus in response to measurements by the image measurement unit of brightnesses of corresponding regions of the specimen image, so as to maintain substantially constant ratios of each of the brightnesses of the plurality of regions of the image to each of the brightnesses of the corresponding regions of the specimen image.

54. (New) The method of claim 34, wherein the control signal is generated so as to maintain substantially constant ratios of each of the brightnesses of the plurality of regions of the image to each of the brightnesses of corresponding regions of the specimen image.